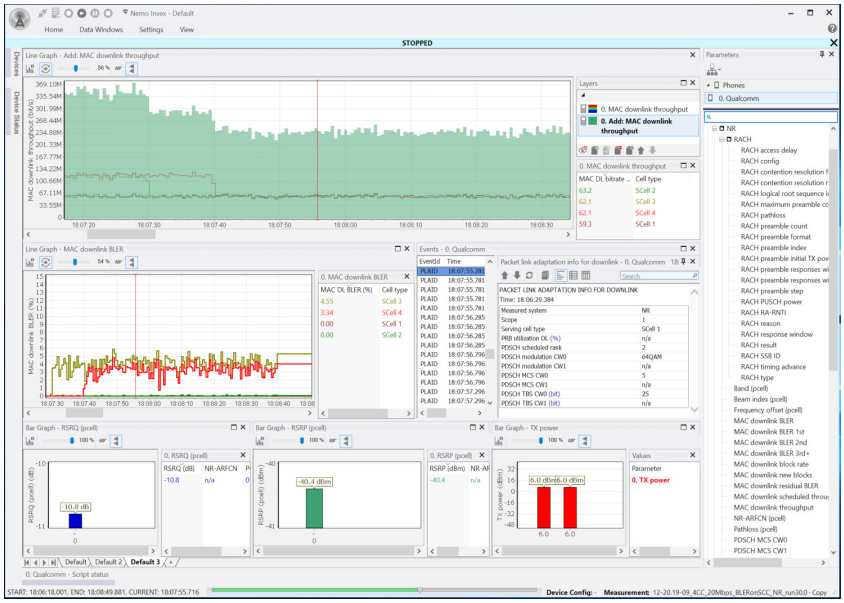
5G NR Field Measurement Solution

Complete measurement system for 5G NR radio propagation and coverage verification

5G NR is moving at an accelerated pace with the first network deployments expected in 2019. Live network testing is needed to ensure beams are transmitting accurately and that throughput per cell, throughput per device, and quality-of-experience metrics can be achieved. Device-based measurements are crucial when assessing the achievable 5G NR quality-of-service, mobility, and interoperability with the underlying LTE network.



Our Nemo Outdoor drive test solution combined with Nemo Analyze or Nemo WindCatcher, form the 5G NR field measurement solution from Keysight Technologies, Inc. It provides a complete measurement system for sub 6 GHz and millimeter wave (mm-wave) frequency spectrum. The solution includes all the necessary software and hardware to collect, post-process, analyze, and visualize the data and to generate statistical information that can easily be shared throughout the organization.

Features

- Perform real 5G NR field measurements with Qualcomm X50-based devices and scanning receivers
- Measure and verify sub 6 GHz and mm-wave frequency spectrum, reflection and penetration for indoor and outdoor environments
- Perform 5G NR measurements with demodulation of the 5G NR reference signals
- Easily align the transmitter and receiving directional antenna
- Measure accurate total channel power level over the measured bandwidth
- Visualize the measurement results with maps
- Easily generate statistical reports and coverage plots with data analytic tools

KEYSIGHT TECHNOLOGIES

Redefining 5G NR Drive Testing

Massive MIMO (mMIMO) with beamforming will be used to achieve higher network capacity and higher data throughputs in the new 5G NR frequency bands. Using these technologies, however, changes the radio access from cell coverage to beam coverage, representing a significant change from 4G networks.

5G NR will change the testing methodologies, requiring both scanning receivers and test UEs for field verification. A scanner is a good tool for SSB reference beam coverage measurements, and UE-based active field testing (drive testing) is needed for the verification of the rest of the 5G NR functionalities.

Measure and Analyze Signal Power Levels from 5G NR Base Stations

Keysight's 5G NR field measurement solution provides a complete measurement system for sub 6 GHz and millimeter wave (mm-wave) propagation and coverage measurements in different radio environments, both indoors and out on the field. The solution combines Keysight's powerful drive test tool Nemo Outdoor with Qualcomm X50 chipset-based devices, 3rd party scanning receivers, and FieldFox handheld spectrum analyzer.

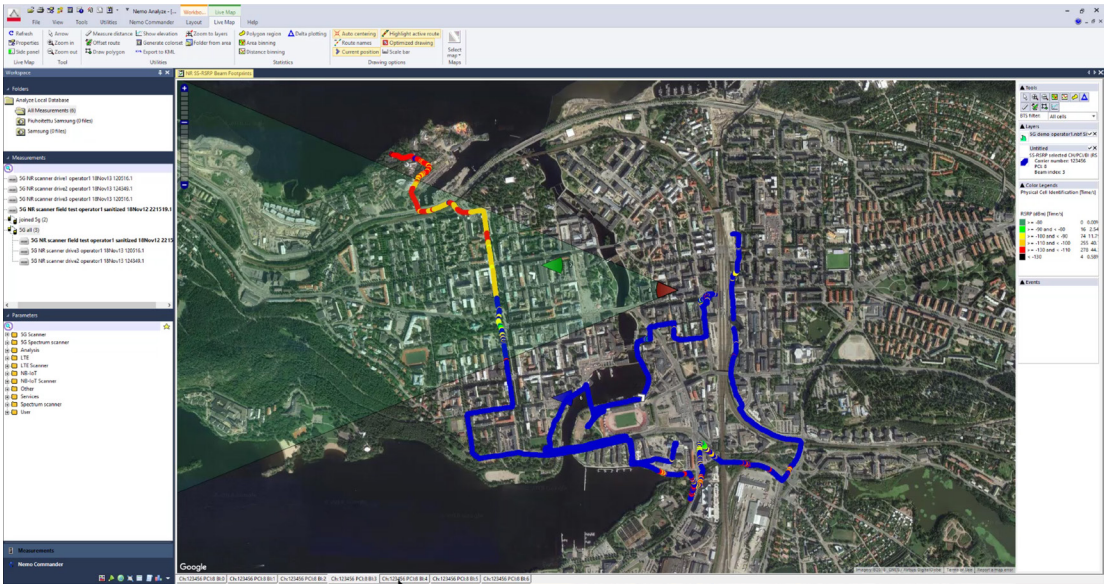
The collected metrics include RACH information, TX power, rank (MIMO mode), modulation, MAC throughput and BLER, signal strength, and quality metrics of the SSB beams. In addition, we collect QoS measurements including throughput, and latency. The 5G NR test system can be used to perform real 5G NR measurements with demodulation of the 5G NR reference signals and it enables simultaneous 2G, 3G, 4G, and 5G NR spectrum scan and frequency scan (CW) measurements.

In addition, when Nemo Outdoor is combined with Keysight's FieldFox handheld spectrum analyzer, the system provides the total channel power level over the measured bandwidth enabling network vendors and operators to evaluate and verify the propagation models for sub 6 GHz and mm-wave frequencies speeding up time-to-market of 5G base stations.

Visualize 5G NR Beam Coverage and Quality

Nemo Analyze supports the analysis of 5G NR scanning receiver measurements collected with Nemo Outdoor. Use Nemo Analyze to visualize 5G NR beam coverage and quality metrics on a map and to identify coverage gaps and locations with high interference.

All metrics recorded with the scanners are available for post-processing, including SS-RSRP, SS-RSRQ, SS-SINR, for each distinct SSB beam. A ready-made playback template with all the key metrics and KPIs is available for quick analysis and an automated routine for plotting the SSB beam footprints of all beams is also included. In addition, Nemo Analyze supports the analysis of measurements done with Keysight´s FieldFox.



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